

BUCEPHALUS BAER, 1827, AND *B. POLYMORPHUS*
BAER, 1827 (TREMATODA); PROPOSED USE OF THE
PLENARY POWERS TO CONSERVE THESE NAMES IN
ACCORDANCE WITH GENERAL USE.
Z.N.(S.) 2251

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Abstract. - Recent work on trematode parasites of freshwater fishes has shown that, if the Law of Priority is strictly applied, the species commonly known as *Rhipidocotyle illensis* (Ziegler, 1883) Vejnár, 1956, must be known as *R. polymorphus* (Baer, 1827) and the forgotten name *Gasterostomum fimbriatum* Siebold, 1848 must be applied to the species widely known as *Bucephalus polymorphus* Baer, 1827. At the same time, the well known generic name *Rhipidocotyle* Diesing, 1858 must fall as a synonym of *Bucephalus* Baer, 1827, and the forgotten name *Gasterostomum* Siebold, 1848 must be revived for the genus known at present as *Bucephalus*. The Commission is asked to take the necessary steps to prevent these changes being made.

In European freshwater fishes there are two common species of trematodes of the family BUCEPHALIDAE, known as *Bucephalus polymorphus*, Baer, 1827 and *Rhipidocotyle illensis* (Ziegler, 1883) Vejnár, 1956. It has been assumed that *Bucephalus polymorphus* develops from the cercaria described under this name by Baer in 1827, but the cercaria of the trematode now known by that name has not yet been described, although it was figured by Kinkelin (1968).

2. While studying the biology of these two species, both of which occur in Poland, I examined bivalves (the first intermediate host), cyprinid fishes (the second intermediate host) and predatory fishes (the definitive host); I found two different cercariae from which I experimentally obtained metacercariae of two species, but the metacercaria of *Rhipidocotyle illensis* developed from cercariae identical with those described by Baer as *Bucephalus polymorphus*. Detailed data on the morphology of all developmental stages can be found in Baturó (1977).

3. As a result of this study it has become necessary to set in order the names of these two species of Trematoda. For stability of nomenclature it is necessary to maintain the names commonly used

and accepted in all keys, textbooks and monographs: the generic name *Bucephalus* and the specific name *B. polymorphus* for the species known under this name; the other species, which belongs to the genus *Rhipidocotyle* Diesing, 1858, should under the Law of Priority be known as *R. campanula* (Dujardin, 1845). The history of the case is as follows.

4. Baer (1827:570–589) established the genus *Bucephalus* for the new species *B. polymorphus* (the type species by monotypy). He based the description on sporocysts and cercariae from the bivalves *Anodonta mutabilis* Clessin and *Unio pictorum* Linnaeus.

5. In 1845 Félix Dujardin described from the intestine of *Esox lucius* Linnaeus small adult trematodes which, according to the author, represent the same species as metacercariae that he had formerly found on the branchia of *Cyprinus idus* Linnaeus. He classified them in the genus *Distoma* and gave the new name *campanula*. The description of the anterior organ given by Dujardin suggests that he was dealing with the adult trematode known today under the name *Rhipidocotyle illensis* (Ziegler, 1883).

6. Siebold (1848) gave the first short description of the adult trematode from the intestine of *Perca fluviatilis* Linnaeus and *Lucioperca* sp. and erected the new genus *Gasterostomum* for it with the new species *fimbriatum*. Siebold expressed the assumption that the cercaria described by Baer was a larva of this adult stage.

7. Wagener (1852, 1857, 1858) gave in his works a more accurate description of *Gasterostomum fimbriatum*, together with drawings of the trematodes. He states that the trematode *G. fimbriatum* that he found is characterised by five tentacles on the anterior organ. In his next work he presented drawings of the trematode described and said that *G. fimbriatum* Siebold was probably a synonym of *Bucephalus polymorphus* Baer. A year later Wagener considered *G. fimbriatum* Siebold and *Distoma campanula* Dujardin to be synonyms of *B. polymorphus*. He regarded *G. fimbriatum* Siebold as a sexually mature, tailless *B. polymorphus* Baer.

8. Ever since Wagener's papers, the view has been adopted that the adult trematode *G. fimbriatum* Siebold, characterised by the presence of long tentacles on the anterior sucker, develops from the cercariae described under the name *Bucephalus polymorphus*. Diesing questioned this view in 1858, but by reason of erroneous interpretations by this author in other matters, his works have not been taken into account.

9. In 1883 Ziegler obtained metacercariae experimentally by infecting *Leuciscus erythrophthalmus* Linnaeus with *B. polymorphus* cercariae developed in *Anodonta mutabilis* Clessin from

the Ille river. In describing and illustrating the material obtained, he pointed out the morphological differences between the specimens reared and *G. fimbriatum* Siebold, but he did not determine unequivocally the specific distinction of these two forms. He stipulated, however, that in case the differences observed by him should prove to be specific differences, he proposed to call the reared form *Gasterostomum illense*.

10. Lühe (1909) considered *G. fimbriatum* as a synonym of *B. polymorphus* Baer, but the description and drawing included in the key correspond to *illensis*. Similarly Eckmann (1932) acknowledged the existence of only one species, recognising *G. fimbriatum* as a synonym of *B. polymorphus* and questioning whether the form obtained by Ziegler was a separate species.

11. A return to the former concept of the occurrence of more than one species of BUCEPHALIDAE in European freshwater fishes dates from the work of Koval (1949), who recorded two species in the fishes of the River Dnieper. She described one of them as a new species, *Bucephalus markewitschi*, and used the name *B. polymorphus* Baer for the second species, which corresponded with *G. illense*.

12. This proposition was not accepted, and Vejnar (1956), for example, predicating the existence of two species of trematodes in Percid fishes, regarded the form with tentacles as *B. polymorphus* Baer and identified the other species with the forms described by Ziegler. He transferred this species to the genus *Rhipidocotyle* Diesing, 1858, using the combination *Rhipidocotyle illense* [sic], (Ziegler, 1883). Vejnar's view was supported by Kozicka (1959), who included in her work the history of the study of one of these trematodes, together with detailed descriptions and drawings of adult worms of both species. Kozicka treated the name *B. markewitschi* Koval as a synonym of *B. polymorphus* Baer. The characters mentioned by Kozicka as differentiating the two species have become key characters and are quoted in all recent monographs and keys (e.g. Skrjabin, 1962, *Trematody zhivotnykh i cheloveka*; Yamaguti, 1971, *Synopsis of Digenetic Trematodes of Vertebrates*; Bykovskij, 1962, *Opredelitel' parazitov preznovodnykh ryb SSSR*; Ergens & Lom, 1970, *Puvodci parazitarnich nemoci ryb*).

13. Dollfus (1968) discussed the problems of synonymy once again. Presenting the documentation of the manuscript of the chapter on Trematodes from Dujardin's *L'histoire naturelle des Helminthes*, he drew attention to the likeness of the drawing of *Distoma campanula* made by Dujardin to *R. illensis* and proposed the new combination *Rhipidocotyle campanula* (Dujardin, 1845) for this species.

14. Finally, it is necessary to mention the paper by Kinkelin

and others (1968) who, in a study of the pathogenic effects of *B. polymorphus* cercariae, presented photographs of three developmental stages of this trematode. Cercariae from *Dreissena polymorpha* Pallas differ from *B. polymorphus* cercariae drawn by Baer. The metacercariae and adult are characterised by finger-like tentacles on the anterior sucker. Although the authors did not discuss this problem in their paper, thanks to their correct documentation the adult stage with finger-like tentacles on the anterior sucker was for the first time associated with its corresponding cercaria. My study confirms that these are successive developmental stages of one species.

15. Thus, according to the Law of Priority, the species commonly known as *Rhipidocotyle illensis* (Ziegler, 1883) Vejnár, 1956, whose adult develops from cercariae described by Baer (1827), should bear the name *polymorphus* Baer, 1827, while the forgotten name *fimbriatum* Siebold, 1848, should be restored for the species widely known as *Bucephalus polymorphus* Baer, 1827. At the same time, it is necessary to regard the generic name *Rhipidocotyle* Diesing, 1858, as a synonym of *Bucephalus* Baer, 1827, and to validate the forgotten name *Gasterostomum* Siebold, 1848, for the genus known at present as *Bucephalus*.

16. The introduction of such changes, though in accordance with the Law of Priority, disagrees with the principle of stability and universality of nomenclature. The key characters of trematodes are based on the morphology of the adults and metacercariae, not on the cercariae. Likewise, most data in the literature concern these two developmental stages. Both species are common parasites of fishes and are widely met as metacercariae and adults. For many practising parasitologists the cercariae from which the metacercariae and adults develop are often unknown – as witness the paper by Kinkelin and others (1968), in which the authors, presenting adequate photographic documentation, did not observe the fact that they were dealing with unknown cercariae. Strict application of the Law of Priority to the nomenclature of these common fish parasites will lead to much confusion and erroneous identification of material.

17. Through the cooperation of Dr G. Hartwich, syntypes of *G. fimbriatum* Siebold, 1848, prepared by Eckmann (1932) have been found in the Zoological Museum, Humboldt University, Berlin. By designating one of these as the lectotype of *G. fimbriatum* (and I hereby so designate microscopic preparation No. 1655b) and also as the neotype of *Bucephalus polymorphus* Baer, 1827, stability of nomenclature can be assured. This latter action, however, can only be taken by the Commission using its plenary

powers, because the proposed neotype does not agree "with what is known of the original type-material" as is required under Article 75c(4).

18. Before putting precise proposals to the Commission, it is necessary to clarify the status of the genus *Rhipidocotyle* Diesing, 1858. This was proposed by Diesing (1858: 313, 361) with two included species, *Distoma gracilescens* Rudolphi, 1819: 111, 409, and *Gasterostomum minimum* Wagener, 1852: 558, neither of which was designated as type species. According to Eckmann, 1932: 99, Stiles & Hassall "1906" [*sic*; correctly 1908: 358] were the first authors to designate a type species, and chose *gracilescens*. However, Stiles & Hassall only said "(type probably *gracilescens*)", and that cannot be accepted as a valid designation. Nicoll, 1914: 490, definitely designated *Gasterostomum minimum* Wagener, 1852: 558, and that stands as the first valid designation of a nominal type species for *Rhipidocotyle*. The valid name for this species is *R. galeata* (Rudolphi) (*Monostoma galeatum* Rudolphi, 1819: 86).

19. Accordingly, the International Commission is requested:

- (1) to use its plenary powers to set aside all designations of type specimen hitherto made for the nominal species *Bucephalus polymorphus* and to designate microscopic preparation No. 1655b in the Zoological Museum, Humboldt University, Berlin, as neotype of that species;
- (2) to place on the Official List of Generic Names in Zoology:
 - (a) *Bucephalus* Baer, 1827 (gender, masculine), type species, by monotypy, *Bucephalus polymorphus* Baer, 1827;
 - (b) *Rhipidocotyle* Diesing, 1858 (gender: feminine), type species, by subsequent designation by Nicoll, 1914, *Gasterostomum minimum* Wagener, 1852;
- (3) to place on the Official List of Specific Names in Zoology:
 - (a) the specific name *polymorphus* Baer, 1827, as published in the binomen *Bucephalus polymorphus* (specific name of type species, as defined by the neotype designated under the plenary powers in (1) above, of *Bucephalus* Baer, 1827);
 - (b) the specific name *galeatum* Rudolphi, as published in the binomen *Monostoma galeatum*;
- (4) to place on the Official List of Family-Group Names in Zoology the family name BUCEPHALIDAE Poche, 1907 (type genus *Bucephalus* Baer, 1827).

I should like to express my gratitude to Miss G. Supel for her help in translating my work, and to Docent Dr hab. M. Mroczkowski for his advice in formulating my application.

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